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10/753,327	01/09/2004	Helmut Preisach	Q78982	7254
23373 7590 08/01/2007 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
			EXAMINER DSOUZA, JOSEPH FRANCIS A	
			ART UNIT 2611	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/753,327

Applicant(s)

PREISACH, HELMUT

Examiner

Adolf DSouza

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 13, 15 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Arguments***

1. The Examiner has accepted changes to the specification, claims and abstract.
2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection

Argument: Applicant amended claim 1 to state that the data recovery circuit is connected to the output of the equalizer and then argued that Alexander did not disclose it (Remarks 5/21/2007, page 16, last 2 lines onwards).

Response: Examiner is introducing a new reference Smith et al. (US 5,524,109) to address the amended claim.

3. Applicant's arguments, see (Remarks 5/21/2007, page 18, "Claim 2"), with respect to the rejection(s) of claim(s) 2 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Smith et al. (US 5,524,109) and Maione et al. (US 4,019,048).

4. Applicant's arguments, see (Remarks 5/21/2007, page 18, "Claim 3"), with respect to the rejection(s) of claim(s) 3 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Maione et al. (US 4,019,048).

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5. Applicant's arguments (see bullets below) filed 5/21/2007 have been fully considered but they are not persuasive.

- Argument: Applicant argued that Examiner relies on Carriere to provide the test loop and argues that it is a test loop for a modem not a regenerator (Remarks 5/21/2007, page 18, "Claim 4")

Response: Carriere discloses that a portion of the output is fed back to the input while no signal is transmitted or received from the line (column 11, lines 13 – 18, 26 – 34). Since the concept is the same, Examiner argues that one of ordinary skill in the art can easily use Carriere's method in a regenerator case.

- Argument: Applicant argued that Roberts' adders do not function to generate a signal that corresponds to a difference between the outputs of the first and second taps (Remarks 5/21/2007, page 19, "Claim 6").

Response: Examiner respectfully disagrees. Roberts discloses and tapped delay line adaptive equalizer (Fig. 6; column 3, lines 16 – 31) and that the weights may be positive or negative (column 3, lines 22 – 23). This implies that the adder can do a subtraction.

- Argument: Applicant argued that Zwan does not provide a test signal output from each unused port (Remarks 5/21/2007, page 19, "Claim 11").

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Response: Examiner respectfully disagrees. Zwan discloses (Fig. 10E – F; column 12, line 46 – column 13, line 34) that a test signal is passed through switch matrices (column 12, line 48- 51). Though, Zwan may not explicitly state a port, it is obvious to one of ordinary skill in the art that the signal is routed through a port.

### ***Claim Objections***

6. Claims 1, 13, 14 are objected to because of the following informalities:
- In claim 1, “data recovery circuit” should be changed to “clock and data recovery circuit” since that is what is described in the specification.
  - There are 2 claim 13’s .
  - In claim 14, “two peak detector” should be changed to “two peak detectors” since “two peak detector” makes it appear that there is a single peak detector that is detecting two peaks.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 12, 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (US 6,233,077).

Regarding claim 1, Smith discloses an electrical signal regenerator (column 3, lines 51 – 52) comprising:

an equalizer (Fig. 4, element 51; column 4, lines 60 - 67);

a clock data recovery circuit (Fig. 4, element 34; column 5, line 1 – column 6, line 16);

and a switch (Fig. 4, element 60; column 6, lines 17 – 23; wherein the switch is the multiplexer 60 that selects one of the two inputs);

wherein said switch is operable to either connect the data recovery circuit to an output of the equalizer when a higher bitrate multiplex signal is input to the switch or bypass the data recovery circuit and connect to the output of the equalizer when a lower bitrate multiplex signal is input to the switch (Fig. 4, element 60; column 6, lines 17 – 23;

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wherein the switch is the multiplexer 60 that selects one of the two inputs according to one of the two data rates, 4MB/s or 16 MB/s);

Claim 2 is rejected twice, once under 35 USC 102(b) below and once under 35 USC 103(a), later in the Office Action.

Regarding claim 2, Smith discloses the clock data recovery circuit comprises a detector for detecting the bit rate of the input signal (Abstract, line starting with "The associated ..."; column 3, lines 21 – 26; column 5, lines 48 – 50; column 10, lines 5 – 8; wherein the bit rate is known from the frequency at which the resonance occurs).

Regarding claim 12, Smith discloses a method of transmitting an electrical signal having either a first or a second bit rate wherein the first bit rate is higher than the second bit rate (Abstract; column 2, lines 15 – 20; column 3, lines 35 – 37; Fig. 4, element 60, which selects one of the two data rates);

said method comprising the steps of transmitting said electrical signal via a signal path (column 3, lines 35 – 37);

detecting the bit rate of said electrical signal received from the signal path (Abstract, line starting with "The associated ..."; column 3, lines 21 – 26; column 5, lines 48 – 50; column 10, lines 5 – 8; wherein the bit rate is known from the frequency at which the resonance occurs);

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in the case the electrical signal has the first bit rate, performing a first regeneration of said electrical signal and then performing a second regeneration and in the case the signal has the second bit rate, performing said first regeneration of said signal, only (Fig. 4, element 60 which selects either the output of the equalizer or the output of the clock recovery circuit 34 [after equalization] ).

Regarding claim 13, Smith discloses first signal regeneration is an electrical equalization (Fig. 4, element 51; column 4, lines 60 - 67) and wherein said second signal regeneration is a clock data recovery (Fig. 4, element 34; column 5, line 1 – column 6, line 16).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Maione et al. (US 4,019,048).



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Regarding claim 2, Smith discloses the clock data recovery circuit comprises a detector for detecting the bit rate of the input signal (Abstract, line starting with "The associated ..."; column 3, lines 21 – 26; column 5, lines 48 – 50; column 10, lines 5 – 8; wherein the bit rate is known from the frequency at which the resonance occurs).

Maione also discloses the clock data recovery circuit comprises a detector for detecting the bit rate of the input signal (column 8, lines 51 – 61, wherein the bit rate detection is done by extracting the frequency of the data pulse stream [last 2 lines]).

Regarding claim 3, Smith does not explicitly disclose a decision circuit for deciding upon logical signal value 0 or 1.

In the same field of endeavor, however, Maione discloses a decision circuit for deciding upon logical signal value 0 or 1 (column 10, lines 12 - 24).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Maione, in the system of Smith because this would provide a means for determining the value of the received signal, as is well known in the art.

11. Claims 4 , 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Maione et al. (US 4,019,048) and further in view of Carriere (US 5,504,778).

Regarding claim 4, Smith does not disclose a test loop from output to input.

In the same field of endeavor, however, Carriere discloses a test loop controllably connectable from the output to the input of the regenerator (column 11, lines 13 – 18, 26 – 34; wherein the test loop feeds the signal from the output to the input).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Carriere, in the system of Smith because this would allow a loop test to be performed, as is well known in the art.

Regarding claim 13, Smith does not disclose a test loop from output to input.

In the same field of endeavor, however, Carriere discloses a static test signal is fed via the test loop to an input of the equalizer while no external signal is input to the input of the equalizer (column 11, lines 13 – 18, 26 – 34; wherein the test loop feeds the signal from the output to the input when no input signal is present).

12. Claim 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Maione et al. (US 4,019,048) and further in view of Roberts (US 6,067,180).

Regarding claim 5, Smith does not disclose that the analog equalizer is a tapped delay line.

In the same field of endeavor, however, Roberts discloses equalizer being an analogue equalizer comprising a tapped delay line (Fig. 6; column 3, lines 10 – 11, 17 - 31).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Roberts, in the system of Smith because this would provide a means for equalization of the received signal, as is well known in the art.

Regarding claim 6, Smith does not disclose the equalizer has a first and second tap, with the first tap having a higher delay than the second tap and the two signals being connected to an adder/subtractor.

In the same field of endeavor, however, Roberts discloses the analogue equalizer comprising a first tap and a second tap, the first tap having a higher delay than the second tap, both taps being connected to a adder-subtractor for generating a difference signal (column 3, lines 17 - 31; Fig. 6; wherein the analog equalizer is the one used in the optical domain).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Roberts, in the system of Smith because this would provide a means for equalization of the received signal, as is well known in the art.

Regarding claim 7, Smith does not disclose the signal ratio between the two taps is adjustable.

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In the same field of endeavor, however, Roberts discloses the signal ratio between the two taps is adjustable (column 3, lines 17 – 31; wherein the adjustable taps is the filter weights that are controlled to provide an adaptive equalizer).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Roberts, in the system of Smith because this would provide a means for equalization of the received signal, as is well known in the art.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Maione et al. (US 4,019,048) and further in view of Roberts (US 6,067,180) and Townsend et al. (US 5,323,423).

Regarding claim 8, Smith does not disclose that peak detectors determine the ratio.

In the same field of endeavor, however, Townsend discloses the signal ratio between the two taps is adjustable, and wherein the ratio is determined by two peak detectors (Fig. 2, elements 20a, 20b, 24; column 2, lines 14 – 58; wherein the equalizer is the variable filters 20a and 20b and the peak detectors [lines 41 – 46] are used to determine the pulse width adjustment that in turn is used to adjust the variable filter parameters).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Townsend, in the system of

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Smith because this would allow the equalizer parameters to be adjusted based on a measure of the distortion in the signal present, in Townsend's case the measure being the pulse width value).

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Feustel et al. (US 5,552,962).

Regarding claim 9, Smith discloses a signal regenerator (column 3, lines 51 – 52) comprising an equalizer (Fig. 4, element 51; column 4, lines 60 - 67) and a clock data recovery circuit (Fig. 4, element 34; column 5, line 1 – column 6, line 16) and a switch (Fig. 4, element 60; column 6, lines 17 – 23; wherein the switch is the multiplexer 60 that selects one of the two inputs) said switch being operable to either connect the data recovery circuit to an output when an input signal of a higher bit rate multiplex signal is detected or to bypass the data recovery circuit and connect the equalizer to the output when an input signal of a lower bit rate multiplex signal is detected (Fig. 4, element 60; column 6, lines 17 – 23; wherein the switch is the multiplexer 60 that selects one of the two inputs according to one of the two data rates, 4MB/s or 16 MB/s).

Smith does not disclose a network element comprising internal signal paths terminated by an electrical signal generator.

In the same field of endeavor, however, Feustel discloses a network element (Fig. 6, elements 60, 61; column 3, lines 31 - 38) comprising internal electrical signal paths (column 1, lines 22 - 32), wherein at least part of said paths are terminated by an electrical signal regenerator (column 1, lines 22 - 32).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Feustel, in the system of Smith because this would allow regeneration of signals that are distorted by the transmission channel, as is well known in the art.

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Feustel et al. (US 5,552,962) and further in view of Boulais et al. (US 20030002498).

Regarding claim 10, the combined invention of Smith and Feustel does not disclose a switching matrix comprising switch modules connected by cables and regenerator.

In the same field of endeavor, however, Boulais discloses an optical cross connect comprising an electrical space switching matrix, said matrix comprising a number of switch modules (page 1, paragraphs 2 - 4, 8) being interconnected by means of internal electrical cables (page 2, paragraphs 23), an electrical signal regenerator is coupled to one end of each internal electrical cable in front of a switching module (Fig.

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3, element 38; which is the regenerator connected before the TX module which passes the data onto the various transmission lines).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Boulais, in the combined system of Smith and Feustel because this would enable communication of signals in a optical network.

16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Feustel et al. (US 5,552,962) and further in view of Boulais et al. (US 20030002498), Zwan et al. (US 5,991,270) and Yeates (US 5,278,404).

Regarding claim 11, the combined invention of Smith, Feustel and Boulais does not disclose a test signal at each output port and that the regenerators raise an alarm when a valid input signal is not valid.

In the same field of endeavor, however, Zwan discloses matrix modules being adapted to output a test signal at each unused output port (column 12, line 46 – column 13, line 34).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Zwan, in the combined system.

of Smith, Feustel and Boulais because this would test procedure s to be conducted, as is well known in the art.

In the same field of endeavor, however, Yeates discloses the electrical signal regenerators are adapted to raise an alarm when neither a test signal nor a valid input signal is detected (column 2, lines 46 – 49; Fig. 2, element 44; column 3, line 47 – column 4, line 15; wherein the absence of a valid input or test signal is interpreted as a loss transmission).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Yeates, in the combined system of Smith, Feustel and Boulais because this would allow one to know that there is a loss of input signal, as disclosed by Yeates.

17. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 6,233,077) in view of Applicant Admitted Prior Art (hereafter referred to as AAPA).

Regarding claim 15, Smith does not disclose the data rates of 10 Gbits/s and 2.7 Gbits/s.

In the same field of endeavor, however, AAPA discloses the higher bit rate is approximately 10 Gbit/s and the lower bit rate is approximately 2.7 Gbits/s



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(Specification, page 1, last paragraph; wherein the Applicant has admitted that the ITU-T G.709 specification has 3 levels of hierarchy with bit rates of 2.7 and 10 Gbps).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Smith, because this would allow support of various bit rates, as disclosed by AAPA prior art.

***Allowable Subject Matter***

18. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Other Prior Art Cited***

19. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to regeneration, equalization and clock recovery:

Maione et al. (US 4,019,048) discloses Regenerator for an optical transmission system.

Russer et al. (US 4,060,739) discloses circuit arrangement for amplifying pulsed signals.

Bowen (US 4,498,167) discloses a TDM Communication system that uses regeneration and clock recovery.

Bickers (US 4,761,797) discloses a Flexible regenerator.

Mantovani (US 4,839,905) discloses a Multirate automatic equalizer.

### ***Contact Information***

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adolf DSouza whose telephone number is 571-272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



AD

Adolf DSouza  
Examiner  
Art Unit 2611



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